

REMARKS

Objection to Specification

The specification stands objected to under 35 U.S.C. § 112, first paragraph, as allegedly failing to disclose the invention in such terms as would allow one of ordinary skill in the art to practice the invention. This objection is respectfully traversed.

In the drawings the Office Action asserts that the drawings do not show a single isolation trench having uniform cross-section. Applicants respectfully disagree with the assertion in the Office Action. As shown in FIGS. 3 and 4A and 4B there is only one isolation trench 62 having a uniform cross-section.

The 35 U.S.C. § 112 Rejection

Claims 5-10 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This rejection is respectfully traversed.

In the Office Action at paper number 16, paragraph 5, the Office Action asserts that there does not appear to be a written description of the claim limitation “forming a **single** isolation trench **having a uniform cross-section** to define an active region” nor “annular trench” in the application as filed;

The Office Action asserts that, through out the specification, the isolation is originally disclosed as “**isolation trenches 62**” and the active region is defined by; two (more than one) isolation trenches 62. Applicants respectfully disagree with the assertions in the Office Action.

Applicants respectfully point out the following case law that controls the handling of the rejection by the Examiner regarding new matter.

There is a strong presumption that an adequate written description of the claimed invention is present in the specification as filed. *In re Wertheim*, 191 USPQ 90, 96

(CCPA 1976). Consequently, rejection of an original claim for lack of written description should be rare.

Possession of the claimed invention as a whole at the time the application was filed may be shown in many ways. For example, possession may be shown by describing an actual reduction to practice the claimed invention. Possession may also be shown by a clear depiction of the invention in detailed drawings or in structural chemical formulas which permit a person skilled in the art to clearly recognize that applicant had possession of the claimed invention. An adequate written description of the invention may be shown by any description of sufficient, relevant, identifying characteristics so long as a person skilled in the art would recognize that the inventor had possession of the claimed invention. *Purdue Pharma L.P. v. Wells Electronics, Inc.* 48 USPQ2d 1646.

In those instances where a visual representation can flesh out words, drawings may be used in the same manner and with the same limitations as the specification. *Eli Lilly*, 43 USPQ2d 1406.

Drawings alone may provide a written description of an invention as required by Sec. 112. *In re Wolfensperger*, 133 USPQ 537 (CCPA 1962).

Information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter. MPEP 2163.06 RELATIONSHIP OF WRITTEN DESCRIPTION REQUIREMENT TO NEW MATTER.

The claims as filed in the original specification are part of the disclosure and therefore, if an application as originally filed contains a claim disclosing material not disclosed in the remainder of the specification, the applicant may amend the specification to include the claimed subject matter. *In re Benno*, 226 USPQ 683 (Fed. Cir. 1985).

Amendments to an application which are supported in the original description are not new matter. Mere rephrasing of a passage does not constitute new matter. Accordingly, a rewording of a passage where the same meaning remains intact is permissible. *In re Anderson*, 176 USPQ 331 (CCPA 1973).

Applicants were clearly in possession of the claimed invention at the time of filing. The previously filed amendments to the specification were completely within the legal options available to the Applicants.

Specifically, the original claim 1, claimed at least in part, a shallow-trench isolation transistor formed on a semiconductor substrate including an active region on the semiconductor substrate bounded by an isolation trench. The original claim 5, claimed in part “forming an isolation trench to define an active region in the silicon substrate.” An isolation trench is therefore disclosed in the application as filed. An isolation trench is singular, thus a single isolation trench is disclosed. The original claim is part of the disclosure and therefore, can be amended into any part of the application. The concept of an isolation trench is not new matter. The assertion by the Office Action that amending the specification and claims to specify a single isolation trench is new matter is completely incorrect. The claims as filed in the original specification are part of the disclosure and therefore, if an application as originally filed contains a claim disclosing material not disclosed in the remainder of the specification, the applicant may amend the specification to include the claimed subject matter. *In re Benno*, 226 USPQ 683 (Fed. Cir. 1985). Amendments to an application which are supported in the original description are not new matter. Mere rephrasing of a passage does not constitute new matter. Accordingly, a rewording of a passage where the same meaning remains intact is permissible. *In re Anderson*, 176 USPQ 331 (CCPA 1973). Information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter. MPEP 2163.06. The Examiner is also reminded that the claimed elements much contain a single reference numeral. In this application the single isolation trench having uniform cross-section is designated by numeral 62. If there were two trenches, then there would have to be two numerals to designate them.

Additionally, the FIGS. 3, 4A and 4B all being cross-sectional drawings are also part of the original disclosure. The figures clearly depict a single isolation trench having a uniform cross-section. The drawings can flesh out claims. In those instances where a visual representation can flesh out words, drawings may be used in the same manner and

with the same limitations as the specification. *Eli Lilly*, 43 USPQ2d 1406. Drawings alone may provide a written description of an invention as required by Sec. 112. *In re Wolfensperger*, 133 USPQ 537 (CCPA 1962).

Addressing the errors found in the specification, for example by changing the plural of trenches to singular trench is not impermissible. The correction of errors are amendments to an application. Amendments to an application which are supported in the original application are not new matter. An amendment to correct an obvious error does not constitute new matter where one skilled in the art would not only recognize the existence of error in the specification, but also the appropriate correction. *In re Oda*, 170 USPQ 268 (CCPA1971).

With respect to the declaration filed in the case, the declaration presented in the case is evidence. All evidence traversing rejections submitted by applicants, including affidavits or declarations submitted must be considered as evidence. The evidence traversing rejections must be considered by the examiner whenever present. The examiner must specifically explain why the evidence is insufficient. Mere general statements without explanation supporting such findings is insufficient.

Withdrawal of the 35 U.S.C. § 112, first paragraph, rejection is respectfully requested.

Claims 5-10 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter applicant regards as the invention. This objection is respectfully traversed.

In the Office Action at paper number 16, paragraph 7, the Office Action asserts that “a single trench” cannot define anything and thus is indefinite. The Office Action also asserts that to define an area such as an active region, the area should be bound by at least two, for two dimensions, markers, in this instant two trenches. Applicants respectfully disagree with the assertions in the Office Action.

There are two separate requirements set forth in 35 U.S.C. § 112, second paragraph. (A) the claims must set forth the subject matter that applicants regard as their invention; and (B) the claims must particularly point out and distinctly define the meets

and bounds of the subject matter that will be protected by the patent grant. The first requirement is dependent upon what the applicants for a patent regard as their invention. The second requirement is evaluated in the context of whether the scope of the claims is clear to a hypothetical person possessing the ordinary level of skill in the pertinent art. If a rejection is based on 35 U.S.C. § 112, second paragraph, the examiner should further explain whether the rejection is based on indefiniteness or on the failure to claim what applicants regard as their invention. *Ex parte Ionescu*, 222 USPQ 537 (Bd. App. 1984).

A claim may not be rejected solely because of the type of language used to define the subject matter for which patent protection is sought. *In re Swunehart*, 160 USPQ 226 (CCPA 1971).

The terms single isolation trench are clearly defined in the specification in at least pages 9 through 10, figures 3, 4A-4C, numeral 62 and claims 1 and 5. Additionally, evidence has been presented to support the teaching in the specification in the form of the Frank Hawley declaration. The evidence provided supports that one possessing ordinary skill in the art clearly understands the scope of the claims. Since the Office Action has been traversed, Applicant respectfully requests that the Examiner provide specific citation or an Affidavit in support of the assertions in the Office Action

Withdrawal of the 35 U.S.C. § 112, second paragraph, rejection is respectfully requested.

The 35 U.S.C. § 102 Rejection

Claims 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Mehta et al. (U.S. Patent No. 5,646,063) of record. This rejection is traversed.

In the Office Action at paper number 16, paragraph 8, the Office Action asserts that with respect to claim 5, as best understood by the examiner, Mehta teaches a method for fabricating a shallow-trench isolation (STI) transistor formed on a semiconductor substrate as claimed including: forming an isolation trench (44) to define an active region (38) in the silicon substrate (14); performing sidewall isolation implants on the side and bottom walls of the isolation trench (44); depositing a dielectric isolation material (60) in the isolation trench(44), planarizing the top surface of the silicon substrate (14) and the

dielectric isolation material (60), forming a gate oxide layer (135) over the active region (38) in the silicon substrate (14), forming and defining gate (108) regions over the gate oxide layer (135) in the active region (38) in the silicon substrate (14); and forming source and drain regions (112/114) in the active region (38) in the silicon substrate (14). (See Figs. 2-9). The Office Action further asserts that the trench (44) of Mehta has a uniform cross section. The Office Action further asserts that the sidewall implantation of Mehta comprises implanting p-type impurities and that boron is included. Applicants respectfully disagree with the assertions in the Office Action.

To anticipate a claim under 35 U.S.C. § 102, a single source must contain all of the elements of the claim. *Lewmar Marine Inc. v. Barient, Inc.*, 827 F.2d 744, 747, 3 U.S.P.Q.2d 1766, 1768 (Fed. Cir. 1987), cert. denied, 484 U.S. 1007 (1988). Moreover, the single source must disclose all of the claimed elements “arranged as in the claim.” *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984).

The Mehta et al. reference does not disclose each and every claimed element. The Mehta et al. reference does not disclose a method for fabricating a shallow-trench isolation transistor on a semi-conductor substrate including; forming a single isolation trench having a uniform cross section to define an active region in the silicon substrate, performing sidewall isolation implants on the side and bottom walls of said isolation trench, depositing a dielectric isolation material in said isolation trench, planarizing the top surface of said silicon substrate and said dielectric isolation material, forming a gate oxide layer over said active region in said silicon substrate, forming and defining gate regions over said oxide layer in said active region in said silicon substrate; and forming source and drain regions in the active region in the silicon substrate at least as claimed in claim 5.

Since the prior art reference fails to disclose each and every claimed element, then the prior art reference fails to anticipate the claimed invention. In view of the foregoing, it is respectfully requested that the rejection be withdrawn and it is respectfully asserted that the claims are now in condition for allowance.

The 35 U.S.C. § 103 Rejection

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mehta '063 as applied to claims 5 and 6 above, and further in view of Liaw et al. (U.S. Patent No. 5,960,276), of record. This rejection is respectfully traversed.

In the Office Action at paper number 16, paragraph 9, the Office Action asserts that Mehta teaches for claim 8 implanting boron ions into the bottom and side walls of the isolation trench. The Office Action asserts that Liaw teaches implanting boron into the side and bottom walls of the isolation trench at a concentration within the order of magnitude as claimed (E12). The Office Action asserts that it would have been obvious to one having ordinary skill in the art at the time of invention to implant boron into the isolation trench (44) of Mehta at the concentration as taught by Liaw to reduce the reverse narrow width effect in the NMOS areas. (See col. 2, lines 2-28). The Office Action asserts that with respect to claims 9 and 10, Mehta teaches implanting ions into side and bottom walls of the isolation trench. The Office Action asserts that to implant dopants into side and bottom walls of a trench, it is well known in the art to perform at angles. The Office Action asserts that Liaw teaches implanting ions into the side walls of the isolation trench at an angle that includes the angle of the claimed range. The Office Action asserts that it would have been obvious to one having ordinary skill in the art at the time of invention to perform the side wall implantation of Mehta at the angle as taught by Liaw to implant dopant into the side walls. Applicants respectfully disagree with the assertions in the Office Action.

The argument and evidence set forth above is equally applicable here. Since the independent Claim 5 is allowable, then the dependent Claims 6-10 must also be allowable. If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q. 2d 1596 (Fed. Cir. 1988).

In view of the foregoing, it is respectfully requested that the rejection be withdrawn and it is respectfully asserted that the claims are now in condition for allowance.


Request for Allowance

It is believed that this response places the above-identified patent application into condition for allowance. Early favorable consideration of this Amendment is earnestly solicited.

If, in the opinion of the Examiner, an interview would expedite the prosecution of this application, the Examiner is invited to call the undersigned attorney at the number indicated below.

Respectfully submitted,
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